

ABSTRACT

[Means to Solve the Problem]

5 A digital modem comprising a modulation circuit 1 and a demodulation
circuit 2 for modulating/demodulating 1/-1 binary signal. 11 of the modulation
circuit 1 is a generator of sequence $h[k]$ of finite length, and 12 is a generator of
sequence $h[-k]$ of finite length, which is $h[k]$ whose time axis is inverted. A
switch 13 is a selector for changing over $h[k]$ and $h[-k]$ according to 1 or -1 input
signal, and selects the output of the generator 11 generating $h[k]$ when the input
10 signal is 1, and selects the output of the generator 12 generating $h[-k]$ when the
input signal is -1.

21 of the demodulation circuit 2 is a FIR filter having as filter coefficient
the sequence $h[-k]$ which is $h[k]$ whose time axis is inverted, and 22 is a FIR
filter having as filter coefficient the sequence $h[k]$. 23 and 24 are square
15 multipliers. A digital modem of simple communication method not requiring
complicated diffusion symbol or cycle control, wherein input modulations signals
are filtered and output respectively by the FIR filters 21, 22, squared by the
square multipliers 23, 24, and the difference of results is determined to obtain
the demodulation output, is provided.